

PATENT MAINTENANCE
DIVISION

2006 JUL 10 PM 4:38

DEP & REF

Practitioner's Docket No.

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

- ☒ In re application of: Luxfer, Inc.
 Application No.: 10 /644,704 Group No.:
 Filed: August 19, 2003 Examiner:
 For: Valve Embodiment and Combination Valve & Regulator for Use
 With Pressurized Gas Cylinders, Particular Oxygen
☐ Patent:

"NOTE: Insert name(s) of inventor(s) and title also for patent. Where request is with respect to a maintenance fee payment also insert application number and filing date and add Mail Stop 16 to address.

Mail Stop 16

Director of the U.S. Patent and Trademark Office
 P.O. Box 1450,
 Alexandria, VA 22313-1450

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NOTE (FACSIMILE): Refund requests facsimile number 571-273-6500. See "New Patents Central FAX Number and Updated Lists of Exceptions to the Centralized Delivery and Facsimile Transmission Policy for Patent Related Correspondence", 1296 OG 76, July 12, 2005.

CERTIFICATION UNDER 37 C.F.R. §§ 1.8(a) and 1.10*

(When using Express Mail, the Express Mail label number is mandatory;
 Express Mail certification is optional.)

I hereby certify that, on the date shown below, this correspondence is being:

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37 C.F.R. § 1.8(a)

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37 C.F.R. § 1.10 *

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TRANSMISSION

- ☐ facsimile transmitted to the Patent and Trademark Office, (571) 273-6500

Date: June 28, 2006

Signature

Deborah A. Peacock

(type or print name of person certifying)

* Only the date of filing (§ 1.6) will be the date used in a patent term adjustment calculation, although the date on any certificate of mailing or transmission under § 1.8 continues to be taken into account in determining timeliness. See § 1.703(f). Consider "Express Mail Post Office to Addressee" (§ 1.10) or facsimile transmission (§ 1.6(d)) for the reply to be accorded the earliest possible filing date for patent term adjustment calculations.

(Request for Refund (Improper Charge of Credit Card Account) [19-4]—page 1 of 4)

**REQUEST FOR REFUND
(IMPROPER CHARGE OF DEPOSIT ACCOUNT)**

NOTE: 37 C.F.R. § 1.26 Refunds.

(a) The Commissioner may refund any fee paid by mistake or in excess of that required. A change of purpose after the payment of a fee, such as when a party desires to withdraw a patent or trademark filing for which the fee was paid, including an application, an appeal, or a request for an oral hearing, will not entitle a party to a refund of such fee. The Office will not refund amounts of twenty-five dollars or less unless a refund is specifically requested, and will not notify the payor of such amounts. If a party paying a fee or requesting a refund does not provide the banking information necessary for making refunds by electronic funds transfer (31 U.S.C. 3332 and 31 CFR part 208), or instruct the Office that refunds are to be credited to a deposit account, the Commissioner may require such information, or use the banking information on the payment instrument to make a refund. Any refund of a fee paid by credit card will be by a credit to the credit card account to which the fee was charged.

(b) Any request for refund must be filed within two years from the date the fee was paid, except as otherwise provided in this paragraph or in § 1.28(a). If the Office charges a deposit account by an amount other than an amount specifically indicated in an authorization (§ 1.25(b)), any request for refund based upon such charge must be filed within two years from the date of the deposit account statement indicating such charge, and include a copy of that deposit account statement. The time periods set forth in this paragraph are not extendable.

I. REFUND REQUEST

This is a request for a refund, with respect to the charge to Deposit Account
134213, shown on the statement dated Dec 2005, for the
above-identified

- ☒ application.
☐ patent.

(check the following, if desired, and supply copy of statement)

- ☒ A copy of the monthly statement, in which the error referred to occurs, accompanies this request.

II. FEES CHARGED FOR WHICH REFUND REQUESTED

	AMOUNT OF REFUND REQUESTED
<input type="checkbox"/> Basic fee	_____
<input type="checkbox"/> Examination fee	\$ _____
<input type="checkbox"/> Search fee	\$ _____
<input type="checkbox"/> Additional fee for specification and drawings	\$ _____
<input type="checkbox"/> Surcharge for filing the basic filing fee on a date later than the filing date of the application (37 C.F.R. § 1.16(e))	_____
<i>and/or</i>	
<input type="checkbox"/> Surcharge for filing the oath or declaration on a date later than the filing date of the application (37 C.F.R. § 1.16(e))	_____
<input type="checkbox"/> Extension of term	_____
<input type="checkbox"/> first month	_____
<input type="checkbox"/> second month	_____
<input type="checkbox"/> third month	_____
<input type="checkbox"/> fourth month	_____
<input type="checkbox"/> fifth month	_____
<input type="checkbox"/> Excess claims	_____
<input type="checkbox"/> Issue fee	_____
<input type="checkbox"/> Petition fee	_____
<input type="checkbox"/> Patent maintenance fee	_____
<input type="checkbox"/> first maintenance fee	_____
<input type="checkbox"/> second maintenance fee	_____
<input type="checkbox"/> third maintenance fee	_____
<input type="checkbox"/> Patent maintenance fee surcharge	_____
<input checked="" type="checkbox"/> Other _____	_____
<u>Ind Claims in excess of 3</u>	<u>\$200.00</u>
<u>Claims in excess of 20</u>	<u>300.00</u>
_____	_____
TOTAL REFUND REQUESTED	\$500.00

(Request for Refund (Improper Charge of Credit Card Account) [19-4]—page 3 of 4)



III. EXPLANATION OF WHY CONTESTED CHARGE IS IN ERROR

A preliminary Amendment was filed on December 15, 2003. Additional claim fees were paid at the fee schedule in effect at that time.

The only fee due with the Amendment filed on December 1, 2005 is the extension fee, which was paid by check.

It appears that the PTO is billing us for the claims from the December 15, 2003 filing as if they had only been filed in the amendment filed December 1, 2005.

Attached are copies of:

- 1) December 15, 2003 filing
- 2) December 1, 2005 filing
- 3) December 2005 Deposit Account statement

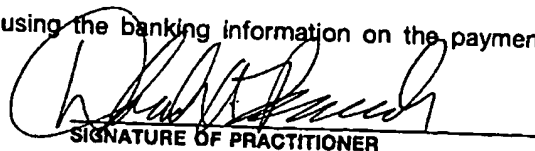
IV. MANNER OF REFUND

Please make the refund by

- ☒ Crediting Deposit Account No. 134213
- ☐ Crediting applicant's credit card as shown on the attached credit card authorization form PTO-2038.

WARNING: Credit card information should not be included on this form as it may become public.

- ☐ Sending refund check to applicant
- ☐ By electronic funds transfer using the banking information on the payment instrument.



SIGNATURE OF PRACTITIONER

Deborah A. Peacock

(type or print name of practitioner)

PO Box 26927

P.O. Address

Albuquerque, NM 87125-6927

Reg. No.: 31,649

Tel. No.: (505) 998-1501

Customer No.: 5179

(Request for Refund (Improper Charge of Credit Card Account) [18-4]—page 4 of 4)



**United States
Patent and
Trademark Office**

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Deposit Account Statement

Requested Statement Month: December 2005
Deposit Account Number: 134213
Name: PEACOCK MYERS, P.C.
Attention: DEBORAH A. PEACOCK
Address: P. O. BOX 26927
City: ALBUQUERQUE
State: NM
Zip: 87125-6927
Country: UNITED STATES OF AMERICA

DATE	SEQ	POSTING REF TXT	ATTORNEY DOCKET NBR	FEE CODE	AMT	BAL
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START	SUM OF	SUM OF	END
BALANCE	CHARGES	REPLENISH	BALANCE
\$2,068.09	\$9,725.00	\$10,700.00	\$3,043.09

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12/1/2005

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Commissioner for Patents



AUTHORIZED SIGNATURE

MEMO SNo. 10/644,704 - one-month extension - W. Hull

⑈019431⑈ ⑆107006606⑆ 7827209855⑈

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Commissioner for Patents
Client Costs Advanced AR

12/1/2005

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31091 - 1001
sjw

Checking-Bank of Albuquerque SNo. 10/644,704 - one-month extension - W. Hull

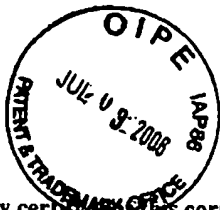
60.00

The RECEIVED stamp of the U.S. Patent and Trademark
Office hereon acknowledges receipt of the following paper:

**AMENDMENT AND REMARKS
(PATENT)**

Applicants: Wendell C. Hull, et al.
For: *Combination Valve and Regulator for Use with
Pressurized Gas Cylinders, Particularly Oxygen Cylinders*
S/N: 10/644,704
Filing Date: August 19, 2003
Contents: Amendment and Remarks; Petition for Extension
of Time (in duplicate); Check for \$60; postcard.

Attorney: Rod D. Baker; Reg. No.: 35,434
Date: December 1, 2005



PATENT APPLICATION

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents, Post Office Box 1450, Arlington VA 22313-1450 on 1 December 2005.

Rod D. Baker, Reg. No. 35,434

December 1, 2005
(Date)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: HULL, W., et al.

Serial No. 10/644,704

Filed: August 19, 2003

For: VALVE EMBODIMENT AND
COMBINATION VALVE AND
REGULATOR FOR USE WITH
PRESSURIZED GAS CYLINDERS,
PARTICULARLY OXYGEN
CYLINDERS

Group Art Unit: 3753

Examiner: Rivell, J. A.

AMENDMENT AND REMARKS

Commissioner for Patents
Post Office Box 1450
Alexandria, VA 22313

Dear Sir:

Please amend the above-identified application as requested herein.

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks begin on page 17 of this paper.

Listing of Claims:

Please amend the claims to read as follows:

Claim 1 (currently amended): An apparatus for regulating the flow of a gas between a high-pressure zone and a zone of lower pressure, said apparatus comprising:

- a hollow body having an axis;
- a first chamber and a second chamber, said chambers defined within said body;
- a nozzle within said body and separating said chambers, said nozzle comprising a convexly curved wall, and defining a passage for the passage of gas between said chambers; and
- a stem movable axially within said passage and comprising:
 - a distal portion extending at least partially into said first chamber;
 - a proximate portion within said second chamber and extending into said passage, wherein axial movement of said stem varies the position of said proximate portion in relation to said nozzle; and
 - an o-ring seat between said proximate portion and said distal portion of said stem and contactable with said nozzle to seal said passage against the passage of gas.

Claims 2-40: (previously canceled)

Claim 41: CANCELED

Claim 42 (currently amended): An apparatus according to claim 41 1 wherein said curved wall is defined by a long radius arc and said nozzle comprises a minimum diameter.

Claim 43 (previously added): An apparatus according to claim 42 wherein the ratio of said long radius to said nozzle minimum diameter is between approximately 2.53:1 and approximately 2.27:1.

Claim 44 (previously added): An apparatus according to claim 42 wherein a diameter of said proximate portion of said stem is at least 98% of said nozzle minimum diameter.

Claim 45 (previously added): An apparatus according to claim 44 further comprising means defined in said stem for providing gas flow area between said stem and said nozzle.

Claim 46 (previously added): An apparatus according to claim 45 wherein said means for providing gas flow area comprises stem flow grooves defined in said proximate portion.

Claim 47 (previously added): An apparatus according to claim 1 wherein said distal portion is removably connectable to said proximate portion of said stem and wherein, when connected, said distal portion and said proximate portion define an annular pocket for receiving said o-ring seat.

Claim 48 (previously added): An apparatus according to claim 47 wherein said distal portion and said proximate portion have a screwed engagement, and wherein when fully engaged said distal portion and said proximate portion squeeze said seat and capture said seat within said pocket.

Claim 49 (previously added): An apparatus according to claim 48 wherein less than one third of the toroidal circumference of said seat is exposed outside said pocket.

Claim 50 (previously added): An apparatus according to claim 48 wherein said o-ring seat comprises an axial cross-sectional area, and said pocket defines an axial cross sectional area from about 7% to about 10% larger than said cross-sectional area of said seat, wherein when said seat is squeezed in said pocket a void is defined in said pocket between said seat and said stem.

Claim 51 (previously added): An apparatus according to claim 50 further comprising a vent hole defined in said stem for providing fluid communication between said pocket and said second chamber for balancing pressures between said pocket and said second chamber.

Claim 52 (previously added): An apparatus according to claim 50 wherein said seat comprises a polymer selected from the group consisting of PTFE Teflon® polymer, CTFE Neoflon® polymer, and Viton® polymer.

Claim 53 (previously added): An apparatus according to claim 50 further comprising:
an axially directed guide hole defined between said body and said proximate
portion of said stem; and
a guide pin inserted in said guide hole thereby to prevent rotation of said
proximate portion around said axis.

Claim 54 (previously added): An apparatus according to claim 1 further comprising
means for regulating pressure in said second chamber.

Claim 55 (previously added): An apparatus according to claim 54 wherein said means for
regulating pressure comprises:

a spring flange movably disposed within said body;
a disk member positionally fixed within said body, said spring flange and said
disk member defining there-between an interstage chamber; and
an axially symmetric shaft passing through a portal in said fixed disk and through
said interstage chamber to separably connect said spring flange to said stem.

Claim 56 (previously added): An apparatus according to claim 55 further comprising an
internal seal for precluding fluid flow past said disk member.

Claim 57 (previously added): An apparatus according to claim 56 further comprising a gasket seal on the distal side of said fixed disk for precluding fluid flow radially past said distal side.

Claim 58 (previously added): An apparatus according to claim 57 further comprising a piston conduit for conveying pressure from said first chamber to a proximate end of said proximate stem portion.

Claim 59 (previously added): An apparatus according to claim 58 further comprising a balancing conduit for conveying the fluid pressure from said second chamber and past said disk member to said interstage chamber.

Claim 60 (previously added): An apparatus according to claim 59 further comprising a snap ring means, engageable with a circumferential groove in said body, for holding said disk member in position.

Claim 61 (previously added): An apparatus according to claim 60 wherein said spring flange is separably connected to a proximate end of said axially symmetric shaft, thereby fixably connecting said spring flange to said stem.

Claim 62 (previously added): An apparatus according to claim 61 further comprising:

a threaded barrel member defining a central portal in its bottom; and

an axial extension from said spring flange;

wherein said extension of said spring flange passes through said portal, and said extension is free to slide within the portal.

Claim 63 (previously added): An apparatus according to claim 62 further comprising

flexible biasing means disposed axially between said barrel and a proximal side of said spring

flange, wherein controlled compression of said biasing means selectively adjusts the force

balance on said spring flange, thereby regulating pressure in said second chamber.

Claim 64 (previously added): An apparatus according to claim 1 wherein said proximate

portion of said stem comprises a threaded means for separably attaching said stem to an

adjustment handle, said threaded means comprising barrel means for containing thread wear

debris.

Claim 65 (previously added): An apparatus according to claim 64 wherein said proximate

portion of said stem defines an external groove for mating with a non-rotational guide pin.

Claim 66 (previously added): An apparatus according to claim 65 wherein said hollow body defines, adjacent said proximate stem portion, an internal groove for mating with a non-rotational guide pin.

Claim 67 (previously added): An apparatus according to claim 66 further comprising a guide pin insertable through a top of said body for mating with said stem external groove and said body internal groove throughout the axial stroke of said stem.

Claim 68 (currently amended): An apparatus for regulating the flow of a gas between a high-pressure zone and a zone of lower pressure, said apparatus comprising:

- a hollow body having an axis;
- a first chamber and a second chamber, said chambers defined within said body;
- a nozzle within said body and separating said chambers, said nozzle defining a passage for the passage of gas between said chambers;
- a stem movable axially within said passage and comprising:
 - a distal portion extending at least partially into said first chamber;
 - a proximate portion within said second chamber and extending into said passage, wherein axial movement of said stem varies the position of said proximate portion in relation to said nozzle; and
 - an o-ring seat between said proximate portion and said distal portion of said stem and contactable with said nozzle to seal said passage against the passage of gas; and

means for regulating pressure in said second chamber, comprising:

a spring flange movably disposed within said body;

a disk member positionally fixed within said body, said spring flange and
said disk member defining there-between an interstage chamber; and

an axially symmetric shaft passing through a portal in said fixed disk
member and through said interstage chamber to separably connect said spring flange to said
stem.

Claim 69 CANCELED

Claim 70 (currently amended): An apparatus according to claim 69 68 further
comprising an internal seal for precluding fluid flow past said disk member.

Claim 71 (currently amended): An apparatus according to claim 69 68 further
comprising a gasket seal on the distal side of said disk member for precluding fluid flow radially
past said distal side.

Claim 72 (currently amended): An apparatus according to claim 69 68 further
comprising a piston conduit for conveying pressure from said first chamber to a proximate end of
said proximate stem portion.

Claim 73 (previously added): An apparatus according to claim 72 further comprising a balancing conduit for conveying the fluid pressure from said second chamber and past said disk member to said interstage chamber.

Claim 74 (previously added): An apparatus according to claim 73 further comprising a snap ring means, engageable with a circumferential groove in said body, for holding said disk member in position.

Claim 75 (previously added): An apparatus according to claim 73 wherein said spring flange is separably connected to a proximate end of said axially symmetric shaft, thereby fixably connecting said spring flange to said stem.

Claim 76 (previously added): An apparatus according to claim 75 further comprising:
a threaded barrel member defining a central portal in its bottom; and
an axial extension from said spring flange;
wherein said extension of said spring flange passes through said portal, and said extension is free to slide within the portal.

Claim 77 (previously added): An apparatus according to claim 76 further comprising flexible biasing means disposed axially between said barrel and a proximal side of said spring flange, wherein controlled compression of said biasing means selectively adjusts the force balance on said spring flange, thereby regulating pressure in said second chamber.

Claim 78 (previously added): An apparatus for regulating the flow of a gas between a high-pressure zone and a zone of lower pressure, said apparatus comprising:

- a hollow body having an axis;
- a first chamber and a second chamber, said chambers defined within said body;
- a nozzle defined by a convexly curved wall within said body and separating said chambers, said nozzle defining a passage for the passage of gas between said chambers; and
- a stem movable axially within said passage and comprising:
 - a distal portion extending at least partially into said first chamber;
 - a proximate portion within said second chamber and extending into said passage, wherein axial movement of said stem varies the position of said proximate portion in relation to said nozzle; and
 - an o-ring seat between said proximate portion and said distal portion of said stem and contactable with said nozzle to seal said passage against the passage of gas.

Claim 79 (previously added): An apparatus according to claim 78 wherein said curved wall is defined by a long radius arc and said nozzle comprises a minimum diameter.

Claim 80 (previously added): An apparatus according to claim 79 wherein the ratio of said long radius to said nozzle minimum diameter is between approximately 2.53:1 and approximately 2.27:1.

Claim 81 (previously added): An apparatus according to claim 79 wherein a diameter of said proximate portion of said stem is at least 98% of said nozzle minimum diameter.

Claim 82 (previously added): An apparatus according to claim 79 further comprising stem flow grooves defined in said proximate portion for providing gas flow area between said stem and said nozzle.

Claim 83 (currently amended): An apparatus for regulating the flow of a gas between a high-pressure zone and a zone of lower pressure, said apparatus comprising:

a hollow body having an axis;

a first chamber defining at least in part said high-pressure zone, and a second chamber, said chambers defined within said body;

a nozzle within said body and separating said chambers, said nozzle defining a passage for the passage of gas between said chambers; and

a stem movable axially within said passage and comprising:

a distal portion extending at least partially into said first chamber;

a proximate portion within said second chamber and extending into said passage, wherein axial movement of said stem varies the position of said proximate portion in relation to said nozzle; and

an o-ring seat between said proximate portion and said distal portion of said stem and contactable with said nozzle to seal said passage against the passage of gas; wherein said distal portion is removably connectable to said proximate portion of said stem and wherein, when connected, said distal portion and said proximate portion define an annular pocket for receiving said o-ring seat, said pocket having a void radially inward from said o-ring seat and between said seat and said stem;

and wherein further said proximate portion is separated from said first chamber by said distal portion and said o-ring seat, whereby to isolate said void from said high-pressure zone.

Claim 84 (previously added): An apparatus according to claim 83 wherein said distal portion and said proximate portion have a screwed engagement, and wherein when fully engaged said distal portion and said proximate portion squeeze said seat and capture said seat within said pocket.

Claim 85 (previously added): An apparatus according to claim 84 wherein less than one third of the toroidal circumference of said seat is exposed outside said pocket.

Claim 86 (currently amended): An apparatus according to claim 85 wherein said o-ring seat comprises an axial cross-sectional area, and said pocket defines an axial cross sectional area from about 7% to about 10% larger than said cross-sectional area of said seat, wherein when said seat is squeezed in said pocket a said void is defined in said pocket between said seat and said stem.

Claim 87 (previously added): An apparatus according to claim 86 further comprising a vent hole defined in said stem for providing fluid communication between said pocket and said second chamber for balancing pressures between said pocket and said second chamber.

Claim 88 (previously added): An apparatus according to claim 86 wherein said seat comprises a polymer selected from the group consisting of PTFE Teflon® polymer, CTFE Neoflon® polymer, and Viton® polymer.

Claim 89 (currently amended): An apparatus for regulating the flow of a gas between a high-pressure zone and a zone of lower pressure, said apparatus comprising:

- a hollow body having an axis;
- an adjustment handle;
- a first chamber and a second chamber, said chambers defined within said body;
- a nozzle within said body and separating said chambers, said nozzle having a minimum diameter and defining a passage for the passage of gas between said chambers; and

a stem movable axially within said passage and comprising:

a distal portion having a diameter less than said minimum diameter of said nozzle, said distal portion extending at least partially into said first chamber;

a proximate portion, within said second chamber, removably connectable to said distal portion and extending into said passage, wherein axial movement of said stem varies the position of said proximate portion in relation to said nozzle; and

an o-ring seat between said proximate portion and said distal portion of said stem and contactable with said nozzle to seal said passage against the passage of gas.

Claim 90 (previously added): An apparatus according to claim 89 wherein said proximate portion of said stem comprises a threaded means for separably attaching said stem to said adjustment handle, said threaded means comprising barrel means for containing thread wear debris.

Claim 91 (previously added): An apparatus according to claim 90 wherein said proximate portion of said stem defines an external groove for mating with a non-rotational guide pin.

Claim 92 (previously added): An apparatus according to claim 91 wherein said hollow body defines, adjacent said proximate stem portion, an internal groove for mating with a non-rotational guide pin.

Claim 93 (previously added): An apparatus according to claim 92 further comprising a guide pin insertable through a top of said body for mating with said stem external groove and said body internal groove throughout the axial stroke of said stem.

Remarks

Claims 1, 42-68, and 70-93 are pending. Please cancel claims 41 and 69. Claims 1, 42, 68, 70-72, 83, 86, and 89 are amended. The allowance of claims 78-82 is acknowledged with appreciation.

The drawings were objected to under 37 CFR 1.84, as being informal. A complete set of new formal drawings, in compliance with 37 CFR 1.121(d) are submitted herewith. Applicants solicit the acceptance of the replacement drawings and their placement in the application file.

Claims 1, 47-50, 83-86 and 89 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Schmitz et al. in view of Pulling. The rejection of claims 1 and 47-50 is overcome by amendment of claim 1. The Examiner indicated that claim 41 was objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all the limitations of the base claim and any intervening claims. Rather than rewriting claim 41, Applicants amend the base claim, claim 1, to import the limitations of claim 41. (There were no intervening claims.) Because claim 1 as amended now includes the subject matter of claim 41, claim 1 is in condition for allowance.

Claims 42-67 depend from claim 1. Claim 1 has been placed in condition for allowance, so claims 42-67 likewise are allowable.

The rejection of claims 83-86 and 89 over Schmitz et al. in view of Pulling is overcome by amendment to claim 83. The Examiner states that the Schmitz et al. device has its "first chamber (at inlet 12)" and a stem with its "distal portion (at 24) extending at least partially into said first (inlet) chamber" It also is observed in the patent to Pulling that the proximate portion of his "stem" (at 1) as well as the distal portion thereof (at 2) are *both* exposed and subject to high pressures from the high-pressure zone of the device. Pulling col. 1, lines 9-15; col. 2, lines 53-57; Fig. 1. Since both the distal part 2 and the proximate part 1 of Pulling's stem extend into the high-pressure zone (in the vicinity of features 6 and 12 of the drawing), high pressure can force gas between the two parts 1 and 2 (along their threaded interface) and into the groove 8 in part 2. The result can be deleterious of even drastic ballooning of Pulling's sealing

ring 9 from its recess, as high pressure between the sealing ring 9 and the distal part 2 force the sealing ring radially outward, out of the groove 8.

As amended, Claim 83 recites the following:

said distal portion and said proximate portion define an annular pocket for receiving said o-ring seat, said pocket having a void radially inward from said o-ring seat and between said seat and said stem;
and wherein further *said proximate portion is separated from said first chamber by said distal portion and said o-ring seat, whereby to isolate said void from said high-pressure zone.*

(Emphasis added.) These limitations, particularly the emphasized portion, from claim 83 are absent from Schmitz et al. and from Pulling. As the Examiner correctly noted in the Office Action, Schmitz discloses nothing of two-piece stems with o-rings. And, as explained immediately above, while Pulling has a two-piece stem and an o-ring, Pulling's proximate portion 1 is not separated from the high-pressure first chamber, but rather is directly exposed to it. Consequently, Pulling's device permits high pressure to drive gas along the threaded connection to the "void" 8 to potentially force the sealing ring 9 therefrom. Since the combination of Schmitz et al. and Pulling does not teach the advantageous limitations added to claim 83 — relating to separating the proximate portion of the stem from the first chamber — claim 83 as amended is distinguishable. Claim 83 is allowable over Schmitz et al. in view of Pulling.

Claims 84-88 depend from claim 83. Claim 83 having been placed in condition for allowance, these dependent claims likewise are allowable over Schmitz et al. in view of Pulling.

Independent claim 89 also stands rejected under 35 U.S.C. § 103(a) over Schmitz et al. in view of Pulling. The rejection is overcome by amendment. Claim 89 has been amended to recite that the nozzle has a "minimum diameter" and that the distal portion of the stem has "a diameter less than said minimum diameter of said nozzle, said distal portion." This feature, as now claimed, permits for very simply and quite preferable "top down" assembly of the apparatus, whereby the complete stem can be inserted down the axis of the apparatus. Support

for the limitation, and explanation of this benefit, is found in the specification at, for example, page 12, lines 3-10; page 18, lines 17-22; and page 21, lines 12-20.

The foregoing is in distinction from the devices of Schmitz et al. and Pulling, both of which employ distal stem portions (24 and 2, respectively) that have diameters far exceeding the diameters of their respective "nozzles" (26 and 5). According, claim 89, as amended, is allowable over these applied references. Dependent claims 88-93 are likewise allowable.

Claims 51 and 87 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Schmitz et al. in view of Pulling as applied to claims 1 and 83, and further in view of Whitener. These rejections have been overcome by the previously explained amendments to claims 1 and 83. Claim 1, as amended, requires that the nozzle have a convexly curved wall. The patent to Whitener does not teach or suggest this limitation to a "convexly curved wall" which is absent from Schmitz et al. and Pulling. Claim 51 depends from claim 1 as amended, and therefore is allowable. Claim 83 was amended to add that "said proximate portion is separated from said first chamber by said distal portion and said o-ring seat, whereby to isolate said void from said high-pressure zone." Whitener does not teach or suggest this limitation (see, for example, Whitener Figs. 2-7). Thus, this limitation is not disclosed even when Whitener is combined with Schmitz et al. and Pulling; claim 87 depends from claim 83 as amended, and claim 87 accordingly is in condition for allowance over these references.

Claims 52 and 88 stand rejected over 35 U.S.C. § 103(a) as being unpatentable over Schmitz et al. in view of Pulling and further in view of Lamb. Lamb shows the use of VITON® o-rings. However, VITON o-rings used in the manner taught by Lamb may be prone to deleterious combustion effects, and unacceptable wear, if used in oxygen systems; see Applicants' specification, page 8, lines 3-11; page 4, line 26 to page 5, line 2; page line 6, lines 10-26.

In any event, Lamb does not disclose or suggest the limitations which were added to independent claims 1 and 83 to place them in condition for allowance over Schmitz et al. and Pulling. Claims because Lamb does not cure the lack of disclosure in Schmitz et al. and Pulling, claims 1 and 88, depending from claims 1 and 83, are allowable over the applied references.

Claims 53, 64-66 and 90-92 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Schmitz et al. in view of Pulling and further in view of Sebenste. These rejections are overcome by the amendments that have been made to independent base claims 1 and 89. Claim 1 now requires that the nozzle comprise a convexly curved wall. The device disclosed by Sebenste does not supply the teaching of a convexly curved wall in a valve-regulator nozzle. Because Sebenste does not supply the teaching present in claim 1 that results in claim 1 being allowable over Schmitz et al. in view of Pulling, dependent claims 53 and 64-66 are allowable for the reason that their base claim 1 is allowable. In a similar vein, claim 89 was amended to require the inclusion of "a distal portion having a diameter less than said minimum diameter of said nozzle, said distal portion extending at least partially into said first chamber." As explained above, which explanation is here repeated by reference, this limitation is not suggested by Schmitz et al. in view of Pulling. Because it also is entirely absent from the disclosure of Sebenste, claims 90-92, which depend from claim 89, are allowable over Schmitz et al. in view of Pulling and further in view of Sebenste.

Claims 54 and 68 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Schmitz et al. in view of Pulling and further in view of Mims et al. The rejection of claim 54 is overcome by the amendment that has been made to independent claim 1, from which claim 54 depends. As amended, claim 1 requires that the nozzle comprise a convexly curved wall. The device of Mims et al. does not have a nozzle featuring a convexly curved wall. Because neither Schmitz et al. nor Pulling nor Mims et al. teach or suggest an apparatus having a "nozzle" with a "convexly curved wall" as required by independent claim 1, dependent claim 54 is allowable over those applied references.

Regarding claim 68, the rejection thereof over Schmitz et al. in view of Pulling and further in view of Mims et al. is overcome by amendment of the claim. The Examiner has indicated that claim 69 would be allowable if re-written in independent form including all of the limitations of the base claim, claim 68. Applicants adopt the Examiner's suggestion by amending claim 68 to import the limitations of claim 69, and canceling claim 69. As amended,

claim 68 contains the allowable subject matter of claim 69, so claim 68 has been placed in condition for allowance.

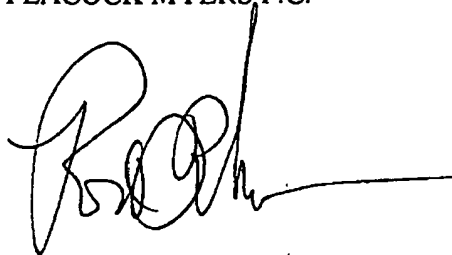
Claims 42, 70-72 are amended to adjust dependency. Claim 86 is amended slightly better to harmonize with its amended base claim.

Re-examination and allowance of the claims, as amended, is respectfully solicited. If the Examiner has any suggestions regarding this application, he is invited to call the undersigned.

Respectfully submitted,

PEACOCK MYERS P.C.

Date: December 1, 2005

A handwritten signature in black ink, appearing to read 'Rod D. Baker', with a long horizontal line extending to the right.

By:

Rod D. Baker, Reg. No. 35,434

Attorneys for Applicant
P.O. Box 26927
Albuquerque, New Mexico 87125-6927
Phone: (505) 998-1504

Attachment: Replacement drawing figures (eleven figures on nine sheets)

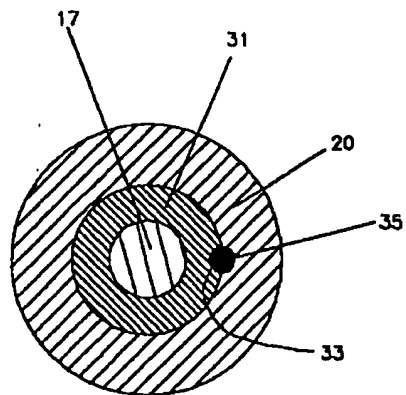


FIG. 1A

FIG. 1

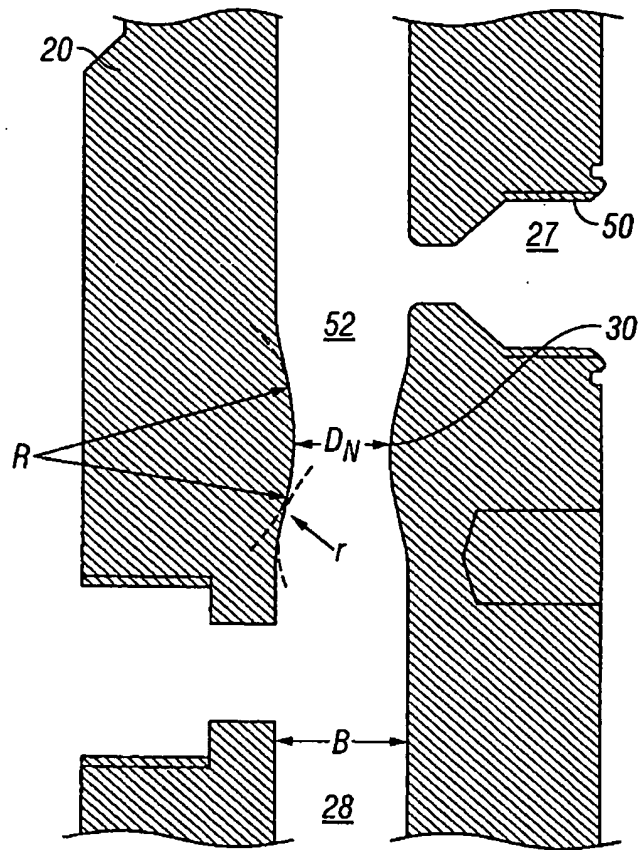


FIG. 2

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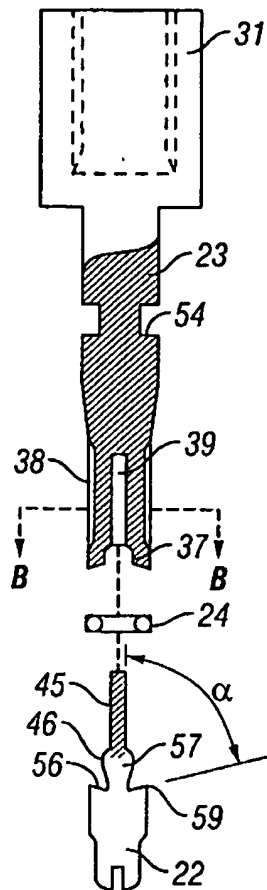


FIG. 3A

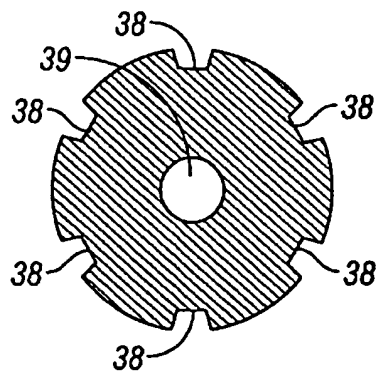


FIG. 3B

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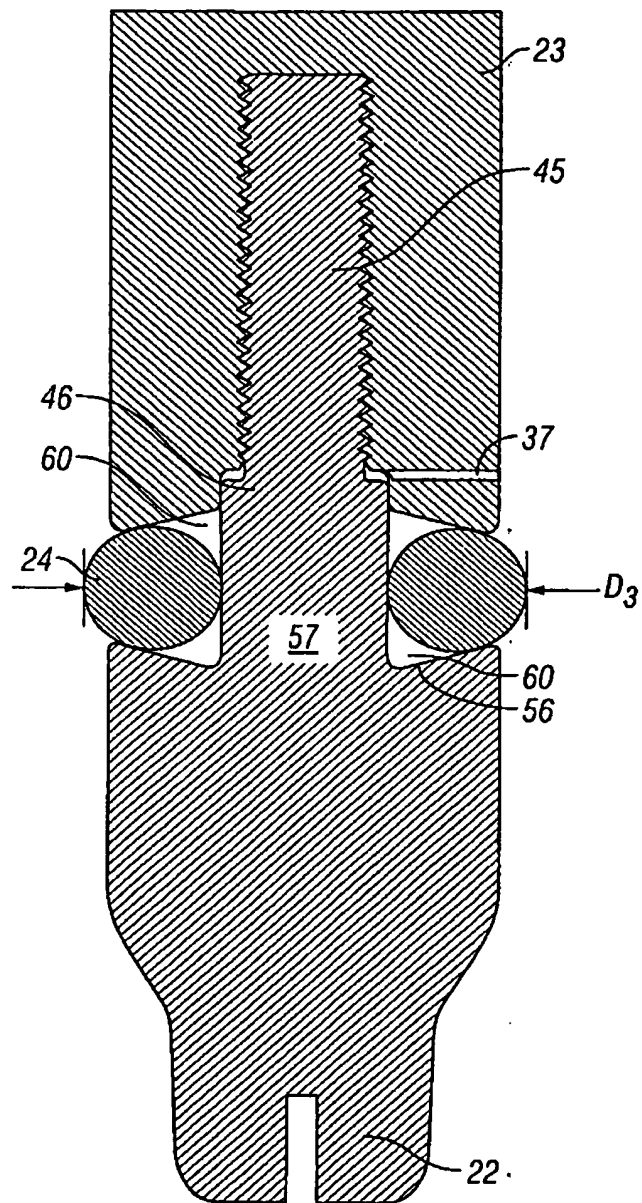


FIG. 4

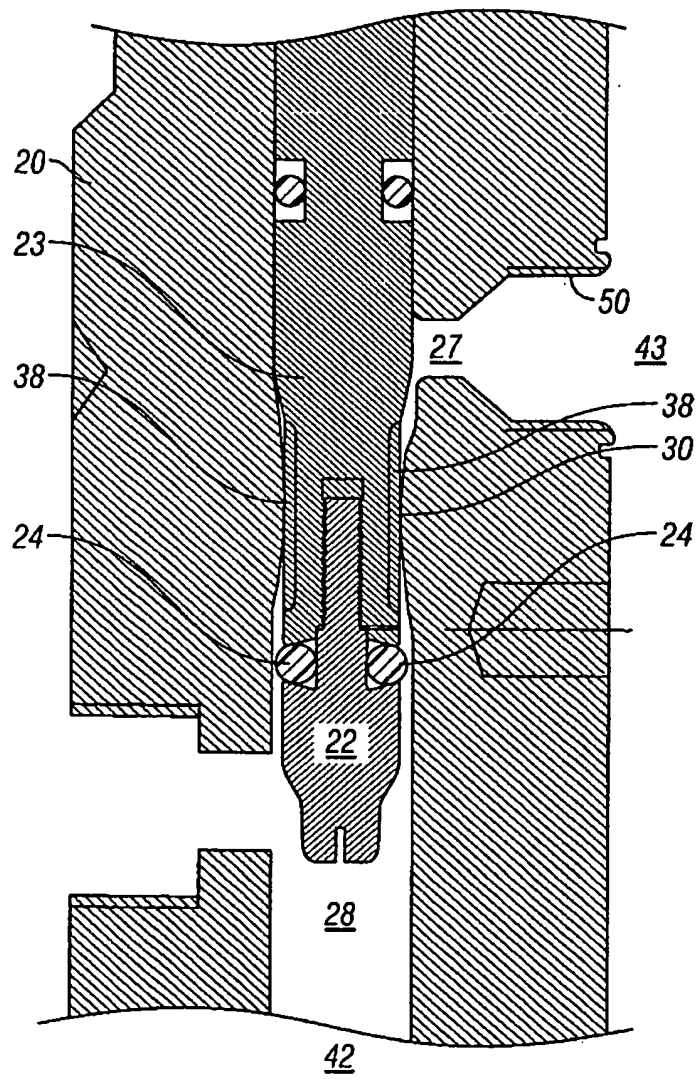


FIG. 5

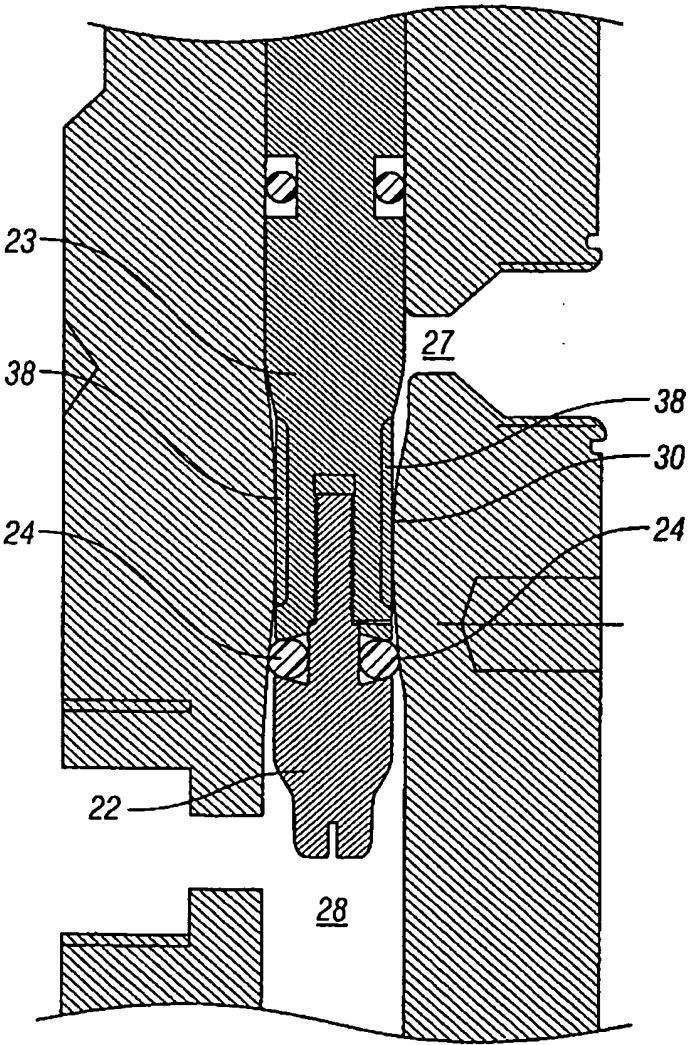


FIG. 6

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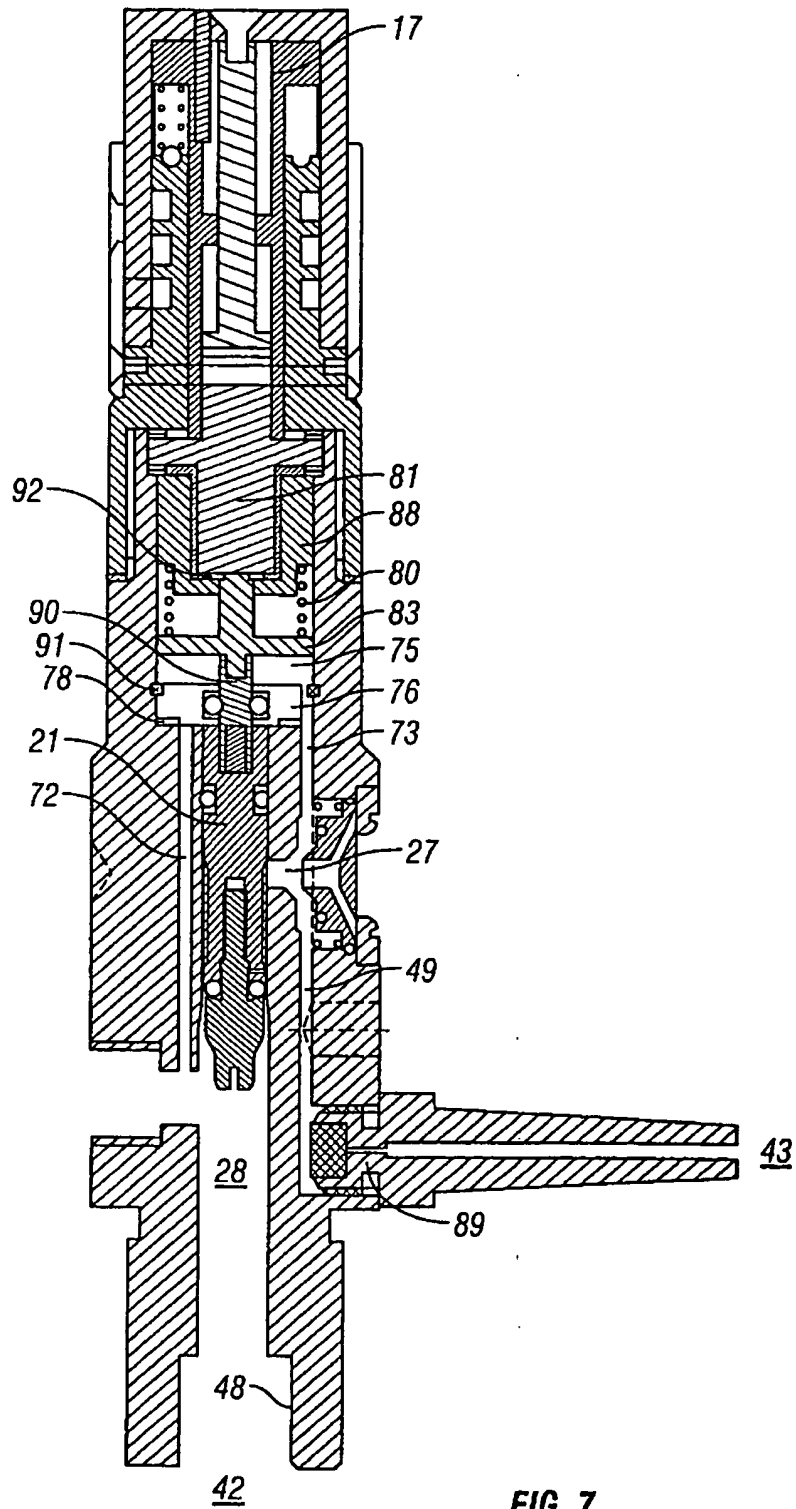


FIG. 7

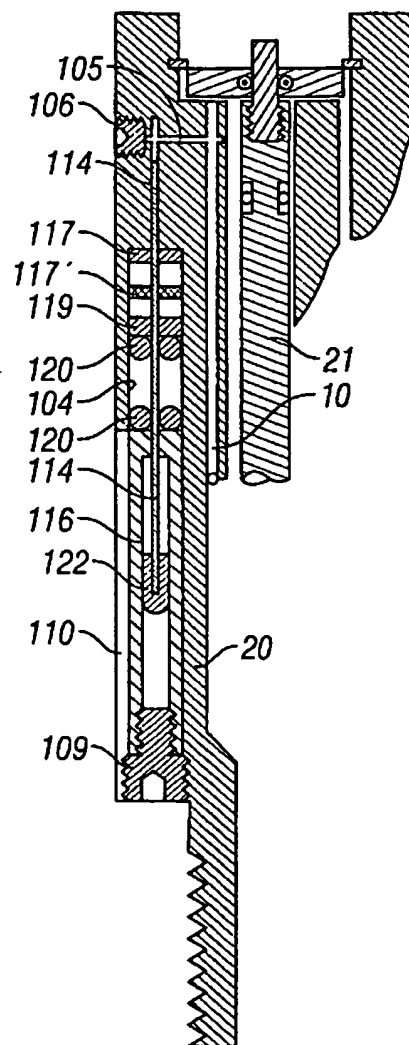


FIG. 8

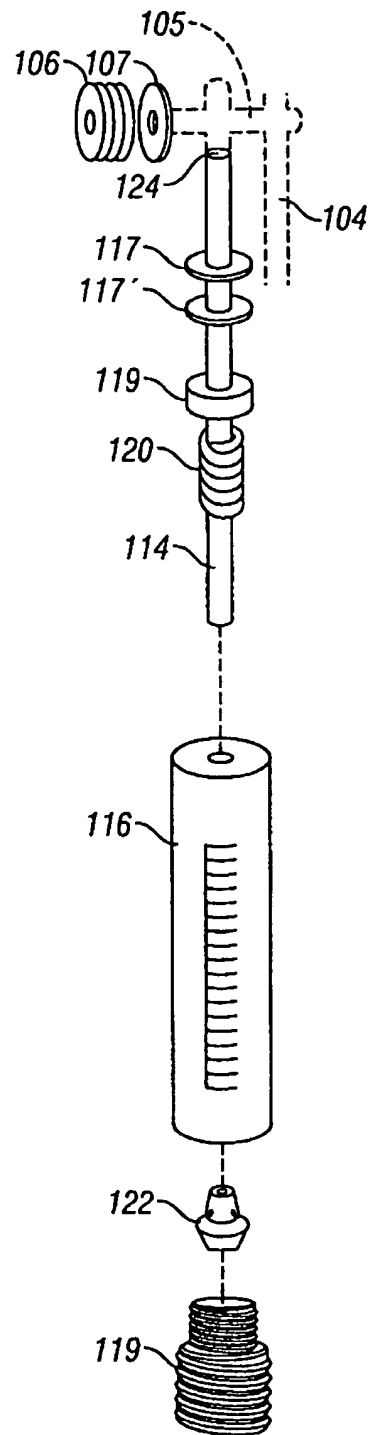


FIG. 9



The RECEIVED stamp of the U.S. Patent and Trademark Office hereon acknowledges receipt of the following paper:

**PRELIMINARY AMENDMENT
(PATENT)**



Applicants: Hull, W., et al.
For: *Combination Valve and Regulator for Use with
Pressurized Gas Cylinders, Particularly Oxygen*
S/N: 10/644,704
Filing Date: August 19, 2003
Contents: Preliminary Amendment; Amendment Transmittal
(in duplicate); Check for \$165; postcard.

Attorney: Rod D. Baker; Reg. No.: 35,434
Date: December 15, 2003



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12/15/2003

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Commissioner for Patents

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MEMO

SNo. 10/644,704 - Extra claims fee - Wendell Hull

⑈004950⑈ ⑆107006606⑆ 7827209866⑈

PEACOCK, MYERS & ADAMS, P.C.

Commissioner for Patents
*Trust-Bank of Albuquerque

Wendell Hull
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Trust-Bank of Albuquerque SNo. 10/644,704 - Extra claims fee - Wendell Hull

165.00

Filed in Duplicate
PATENT APPLICATION

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Hull, W., et al.

Serial No.: 10/644,704

Filed: August 19, 2003

For: COMBINATION VALVE AND REGULATOR
FOR USE WITH PRESSURIZED GAS
CYLINDERS, PARTICULARLY OXYGEN

Examiner: Unknown

Group Art Unit: 3753



AMENDMENT TRANSMITTAL

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Transmitted herewith is an amendment for the above application.

- ☒ Applicant is a small entity (claimed under 37 CFR 1.27)
☐ A Petition for Extension of Time accompanies this filing.
☒ Also enclosed is a Preliminary Amendment.

CALCULATION OF ADDITIONAL CLAIM AND/OR EXTENSION FEES:

	Remaining CLAIMS: after Amendment		Highest No. Previously Paid For	Present Extra	ENTITY RATE Small OR Large		FEE RATE
TOTAL	49	MINUS	40	9	x \$9 x \$18	= =	\$81 \$
INDEP.	5	MINUS	3	2	x \$42 x \$84	= =	\$84 \$
First Presentation of Multiple Dep. Claim					+ \$140 + \$280	= =	\$ \$

EXTENSION FEES (One month = \$55 OR \$110, Two months = \$200 OR 400, Three months = \$460 OR \$920)
MONTH(S)= \$

TOTAL \$165

A check in the amount of \$165 is attached.

Check includes extension of time fee.

☒ No extension of time is required, check is for claim fees only.

For the Commissioner's convenience this transmittal is submitted in duplicate. If any additional fee is required, please charge our Deposit Account No. 13-4213. Please refund any overpayments.

Dated: December 15, 2003

By:

Rod D. Baker, Reg. No. 35,434
Direct line: (505) 998-1504

PEACOCK MYERS & ADAMS, P.C.
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Facsimile: (505) 243-4397
Customer No. 00517

I hereby certify that this paper is being deposited with the U.S. Postal Service
in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria,
Virginia, 22313-1450

Rod D. Baker, Reg. No. 35,434

12-15-03 (date)



PATENT APPLICATION

I hereby certify that this copy of the application being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner of Patents, Post Office Box 1450, Arlington VA 22313-1450 on 15 December 2003.

Rod D. Baker, Reg. No. 35,434

December 15, 2003
(Date)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: HULL, W., et al.

Serial No. 10/644,704

Filed: August 19, 2003

Group Art Unit: 3753

For: COMBINATION VALVE AND
REGULATOR FOR USE WITH
PRESSURIZED GAS CYLINDERS,
PARTICULARLY OXYGEN

Examiner: Unknown

PRELIMINARY AMENDMENT

Commissioner for Patents
Post Office Box 1450
Alexandria, VA 22313

Dear Sir:

Please amend the above-identified application, before examination, as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks begin on page 17 of this paper.

Listing of Claims:

Please amend the claims to read as follows:

Claim 1 (original): An apparatus for regulating the flow of a gas between a high-pressure zone and a zone of lower pressure, said apparatus comprising:

- a hollow body having an axis;
- a first chamber and a second chamber, said chambers defined within said body;
- a nozzle within said body and separating said chambers, said nozzle defining a passage for the passage of gas between said chambers; and
- a stem movable axially within said passage and comprising:
 - a distal portion extending at least partially into said first chamber;
 - a proximate portion within said second chamber and extending into said passage, wherein axial movement of said stem varies the position of said proximate portion in relation to said nozzle; and
 - an o-ring seat between said proximate portion and said distal portion of said stem and contactable with said nozzle to seal said passage against the passage of gas.

Claims 2-40 (canceled)

Claim 41 (new): An apparatus according to claim 1
defines said nozzle.

Claim 42 (new): An apparatus according to claim 41
defined by a long radius arc and said nozzle comprises a minimum

Claim 43 (new): An apparatus according to claim 42 wherein the ratio of said long
radius to said nozzle minimum diameter is between approximately 2.53:1 and
approximately 2.27:1.

Claim 44 (new): An apparatus according to claim 42 wherein a diameter of said
proximate portion of said stem is at least 98% of said nozzle minimum diameter.

Claim 45 (new): An apparatus according to claim 44 further comprising means
defined in said stem for providing gas flow area between said stem and said nozzle.

Claim 46 (new): An apparatus according to claim 45 wherein said means for
providing gas flow area comprises stem flow grooves defined in said proximate portion.

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Claim 47 (new): An apparatus according to claim 1 wherein said distal portion is removably connectable to said proximate portion of said stem and wherein, when connected, said distal portion and said proximate portion define an annular pocket for receiving said o-ring seat.

Claim 48 (new): An apparatus according to claim 47 wherein said distal portion and said proximate portion have a screwed engagement, and wherein when fully engaged said distal portion and said proximate portion squeeze said seat and capture said seat within said pocket.

Claim 49 (new): An apparatus according to claim 48 wherein less than one third of the toroidal circumference of said seat is exposed outside said pocket.

Claim 50 (new): An apparatus according to claim 48 wherein said o-ring seat comprises an axial cross-sectional area, and said pocket defines an axial cross sectional area from about 7% to about 10% larger than said cross-sectional area of said seat, wherein when said seat is squeezed in said pocket a void is defined in said pocket between said seat and said stem.

Claim 51 (new): An apparatus according to claim 50 further comprising a vent hole defined in said stem for providing fluid communication between said pocket and said second chamber for balancing pressures between said pocket and said second chamber.

Claim 52 (new): An apparatus according to claim 50 wherein said seat comprises a polymer selected from the group consisting of PTFE Teflon® polymer, CTFE Neoflon® polymer, and Viton® polymer.

Claim 53 (new): An apparatus according to claim 50 further comprising:
an axially directed guide hole defined between said body and said proximate portion of said stem; and
a guide pin inserted in said guide hole thereby to prevent rotation of said proximate portion around said axis.

Claim 54 (new): An apparatus according to claim 1 further comprising means for regulating pressure in said second chamber.

Claim 55 (new): An apparatus according to claim 54 wherein said means for regulating pressure comprises:
a spring flange movably disposed within said body;
a disk member positionally fixed within said body, said spring flange and said disk member defining there-between an interstage chamber; and
an axially symmetric shaft passing through a portal in said fixed disk and through said interstage chamber to separably connect said spring flange to said stem.

Claim 56 (new): An apparatus according to claim 55 further comprising an internal seal for precluding fluid flow past said disk member.

Claim 57 (new): An apparatus according to claim 56 further comprising a gasket seal on the distal side of said fixed disk for precluding fluid flow radially past said distal side.

Claim 58 (new): An apparatus according to claim 57 further comprising a piston conduit for conveying pressure from said first chamber to a proximate end of said proximate stem portion.

Claim 59 (new): An apparatus according to claim 58 further comprising a balancing conduit for conveying the fluid pressure from said second chamber and past said disk member to said interstage chamber.

Claim 60 (new): An apparatus according to claim 59 further comprising a snap ring means, engageable with a circumferential groove in said body, for holding said disk member in position.

Claim 61 (new): An apparatus according to claim 60 wherein said spring flange is separably connected to a proximate end of said axially symmetric shaft, thereby fixably connecting said spring flange to said stem.

Claim 62 (new): An apparatus according to claim 61 further comprising:
a threaded barrel member defining a central portal in its bottom; and
an axial extension from said spring flange;
wherein said extension of said spring flange passes through said portal, and said extension is free to slide within the portal.

Claim 63 (new): An apparatus according to claim 62 further comprising flexible biasing means disposed axially between said barrel and a proximal side of said spring flange, wherein controlled compression of said biasing means selectively adjusts the force balance on said spring flange, thereby regulating pressure in said second chamber.

Claim 64 (new): An apparatus according to claim 1 wherein said proximate portion of said stem comprises a threaded means for separably attaching said stem to an adjustment handle, said threaded means comprising barrel means for containing thread wear debris.

Claim 65 (new): An apparatus according to claim 64 wherein said proximate portion of said stem defines an external groove for mating with a non-rotational guide pin.

Claim 66 (new): An apparatus according to claim 65 wherein said hollow body defines, adjacent said proximate stem portion, an internal groove for mating with a non-rotational guide pin.

Claim 67 (new): An apparatus according to claim 66 further comprising a guide pin insertable through a top of said body for mating with said stem external groove and said body internal groove throughout the axial stroke of said stem.

Claim 68 (new): An apparatus for regulating the flow of a gas between a high-pressure zone and a zone of lower pressure, said apparatus comprising:

- a hollow body having an axis;

- a first chamber and a second chamber, said chambers defined within said body;

- a nozzle within said body and separating said chambers, said nozzle defining a passage for the passage of gas between said chambers;

- a stem movable axially within said passage and comprising:

 - a distal portion extending at least partially into said first chamber;

a proximate portion within said second chamber and extending into said passage, wherein axial movement of said stem varies the position of said proximate portion in relation to said nozzle; and

an o-ring seat between said proximate portion and said distal portion of said stem and contactable with said nozzle to seal said passage against the passage of gas; and means for regulating pressure in said second chamber.

Claim 69 (new): An apparatus according to claim 68 wherein said means for regulating pressure comprises:

a spring flange movably disposed within said body;

a disk member positionally fixed within said body, said spring flange and said disk member defining there-between an interstage chamber; and

an axially symmetric shaft passing through a portal in said fixed disk member and through said interstage chamber to separably connect said spring flange to said stem.

Claim 70 (new): An apparatus according to claim 69 further comprising an internal seal for precluding fluid flow past said disk member.

Claim 71 (new): An apparatus according to claim 69 further comprising a gasket seal on the distal side of said disk member for precluding fluid flow radially past said distal side.

Claim 72 (new): An apparatus according to claim 69 further comprising a piston conduit for conveying pressure from said first chamber to a proximate end of said proximate stem portion.

Claim 73 (new): An apparatus according to claim 72 further comprising a balancing conduit for conveying the fluid pressure from said second chamber and past said disk member to said interstage chamber.

Claim 74 (new): An apparatus according to claim 73 further comprising a snap ring means, engageable with a circumferential groove in said body, for holding said disk member in position.

Claim 75 (new): An apparatus according to claim 73 wherein said spring flange is separably connected to a proximate end of said axially symmetric shaft, thereby fixably connecting said spring flange to said stem.

Claim 76 (new): An apparatus according to claim 75 further comprising:
a threaded barrel member defining a central portal in its bottom; and
an axial extension from said spring flange;

wherein said extension of said spring flange passes through said portal, and said extension is free to slide within the portal.

Claim 77 (new): An apparatus according to claim 76 further comprising flexible biasing means disposed axially between said barrel and a proximal side of said spring flange, wherein controlled compression of said biasing means selectively adjusts the force balance on said spring flange, thereby regulating pressure in said second chamber.

Claim 78 (new): An apparatus for regulating the flow of a gas between a high-pressure zone and a zone of lower pressure, said apparatus comprising:

- a hollow body having an axis;
- a first chamber and a second chamber, said chambers defined within said body;
- a nozzle defined by a convexly curved wall within said body and separating said chambers, said nozzle defining a passage for the passage of gas between said chambers; and
- a stem movable axially within said passage and comprising:
 - a distal portion extending at least partially into said first chamber;
 - a proximate portion within said second chamber and extending into said passage, wherein axial movement of said stem varies the position of said proximate portion in relation to said nozzle; and

an o-ring seat between said proximate portion and said distal portion of said stem and contactable with said nozzle to seal said passage against the passage of gas.

Claim 79 (new): An apparatus according to claim 78 wherein said curved wall is defined by a long radius arc and said nozzle comprises a minimum diameter.

Claim 80 (new): An apparatus according to claim 79 wherein the ratio of said long radius to said nozzle minimum diameter is between approximately 2.53:1 and approximately 2.27:1.

Claim 81 (new): An apparatus according to claim 79 wherein a diameter of said proximate portion of said stem is at least 98% of said nozzle minimum diameter.

Claim 82 (new): An apparatus according to claim 79 further comprising stem flow grooves defined in said proximate portion for providing gas flow area between said stem and said nozzle.

Claim 83 (new): An apparatus for regulating the flow of a gas between a high-pressure zone and a zone of lower pressure, said apparatus comprising:

a hollow body having an axis;

a first chamber and a second chamber, said chambers defined within said body;
a nozzle within said body and separating said chambers, said nozzle defining a
passage for the passage of gas between said chambers; and

a stem movable axially within said passage and comprising:

a distal portion extending at least partially into said first chamber;

a proximate portion within said second chamber and extending into said
passage, wherein axial movement of said stem varies the position of said proximate portion in
relation to said nozzle; and

an o-ring seat between said proximate portion and said distal portion of
said stem and contactable with said nozzle to seal said passage against the passage of gas;
wherein said distal portion is removably connectable to said proximate portion of said stem and
wherein, when connected, said distal portion and said proximate portion define an annular pocket
for receiving said o-ring seat.

Claim 84 (new): An apparatus according to claim 83 wherein said distal portion and
said proximate portion have a screwed engagement, and wherein when fully engaged said distal
portion and said proximate portion squeeze said seat and capture said seat within said pocket.

Claim 85 (new): An apparatus according to claim 84 wherein less than one third of
the toroidal circumference of said seat is exposed outside said pocket.

Claim 86 (new): An apparatus according to claim 85 wherein said o-ring seat comprises an axial cross-sectional area, and said pocket defines an axial cross sectional area from about 7% to about 10% larger than said cross-sectional area of said seat, wherein when said seat is squeezed in said pocket a void is defined in said pocket between said seat and said stem.

Claim 87 (new): An apparatus according to claim 86 further comprising a vent hole defined in said stem for providing fluid communication between said pocket and said second chamber for balancing pressures between said pocket and said second chamber.

Claim 88 (new): An apparatus according to claim 86 wherein said seat comprises a polymer selected from the group consisting of PTFE Teflon® polymer, CTFE Neoflon® polymer, and Viton® polymer.

Claim 89 (new): An apparatus for regulating the flow of a gas between a high-pressure zone and a zone of lower pressure, said apparatus comprising:

a hollow body having an axis;

an adjustment handle;

a first chamber and a second chamber, said chambers defined within said body;

a nozzle within said body and separating said chambers, said nozzle defining a passage for the passage of gas between said chambers; and

a stem movable axially within said passage and comprising:

a distal portion extending at least partially into said first chamber;

a proximate portion, within said second chamber, removably connectable to said distal portion and extending into said passage, wherein axial movement of said stem varies the position of said proximate portion in relation to said nozzle; and

an o-ring seat between said proximate portion and said distal portion of said stem and contactable with said nozzle to seal said passage against the passage of gas.

Claim 90 (new): An apparatus according to claim 89 wherein said proximate portion of said stem comprises a threaded means for separably attaching said stem to said adjustment handle, said threaded means comprising barrel means for containing thread wear debris.

Claim 91 (new): An apparatus according to claim 90 wherein said proximate portion of said stem defines an external groove for mating with a non-rotational guide pin.

Claim 92 (new): An apparatus according to claim 91 wherein said hollow body defines, adjacent said proximate stem portion, an internal groove for mating with a non-rotational guide pin.

Claim 93 (new): An apparatus according to claim 92 further comprising a guide pin insertable through a top of said body for mating with said stem external groove and said body internal groove throughout the axial stroke of said stem.

Remarks

Claims 1 and 41-93 are pending. Claims 2-40 are canceled. The claims are amended not in view of any prior art, but solely to more particularly point out and distinctly claim the subject matter which Applicants regard as their invention. Entry of the proposed amendment, and reconsideration and allowance of the claims as amended, are respectfully solicited. If the Examiner has any suggestions regarding this application, he is invited to call the undersigned.

An additional claims fee is due. Formerly there were three independent claims and forty claims total. There are now five independent claim and fifty-four total claims. A check for the additional claims fee is submitted herewith.

Respectfully submitted,

PEACOCK, MYERS & ADAMS, P.C.

Date: December 15, 2003

By: _____



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